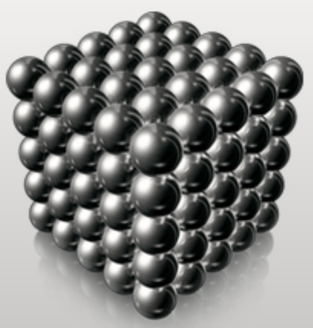
Monitoring Systems with Apple Remote Desktop and Open Source Tools

Session 629

These are confidential sessions—please refrain from filming or taking pictures.



Enterprise IT

Monitoring Systems with Apple Remote Desktop and Open Source Tools

Nader Nafissi
Product Manager
Server and Storage Software Product Marketing

http://developer.apple.com/wwdc2005/

Introduction

- Knowing the health and state of your systems is critical
- Mac OS X includes a rich set of monitoring tools
- Mac OS X server includes even more monitoring tools
- Open Source tools can provide additional monitoring tools

What You'll Learn

- How to extend Apple Remote Desktop
- How to extend Server Monitor
- How to integrate and extend Mac OS X with open source network management tools

Types of Monitoring

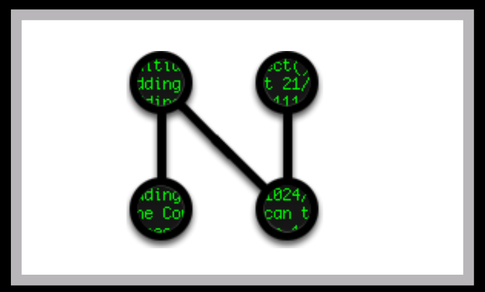
- Assets
- Security
- Software services
- Hardware

Apple Monitoring Tools—Desktop

- Activity Monitor
- Apple Remote Desktop 2
- Apple System Profiler
- Console
- UNIX utilities
  - iostat
  - ioreg
  - netstat
  - top

Apple Monitoring Tools—Server

- Apple Remote Desktop 2
- Server Admin
- Server Monitor
- RAID Admin
- UNIX utilities



Open Source Monitoring Tools

- Nagios
- Ganglia
- Big Brother
- snort
- nmap
- mrtg

System Monitoring and Reporting With Apple Remote Desktop 2.2

Michael Lopp
Sr. Engineering Manager, Desktop Management Solutions

http://developer.apple.com/wwdc2005/

ARD, Your IT Swiss Army Knife

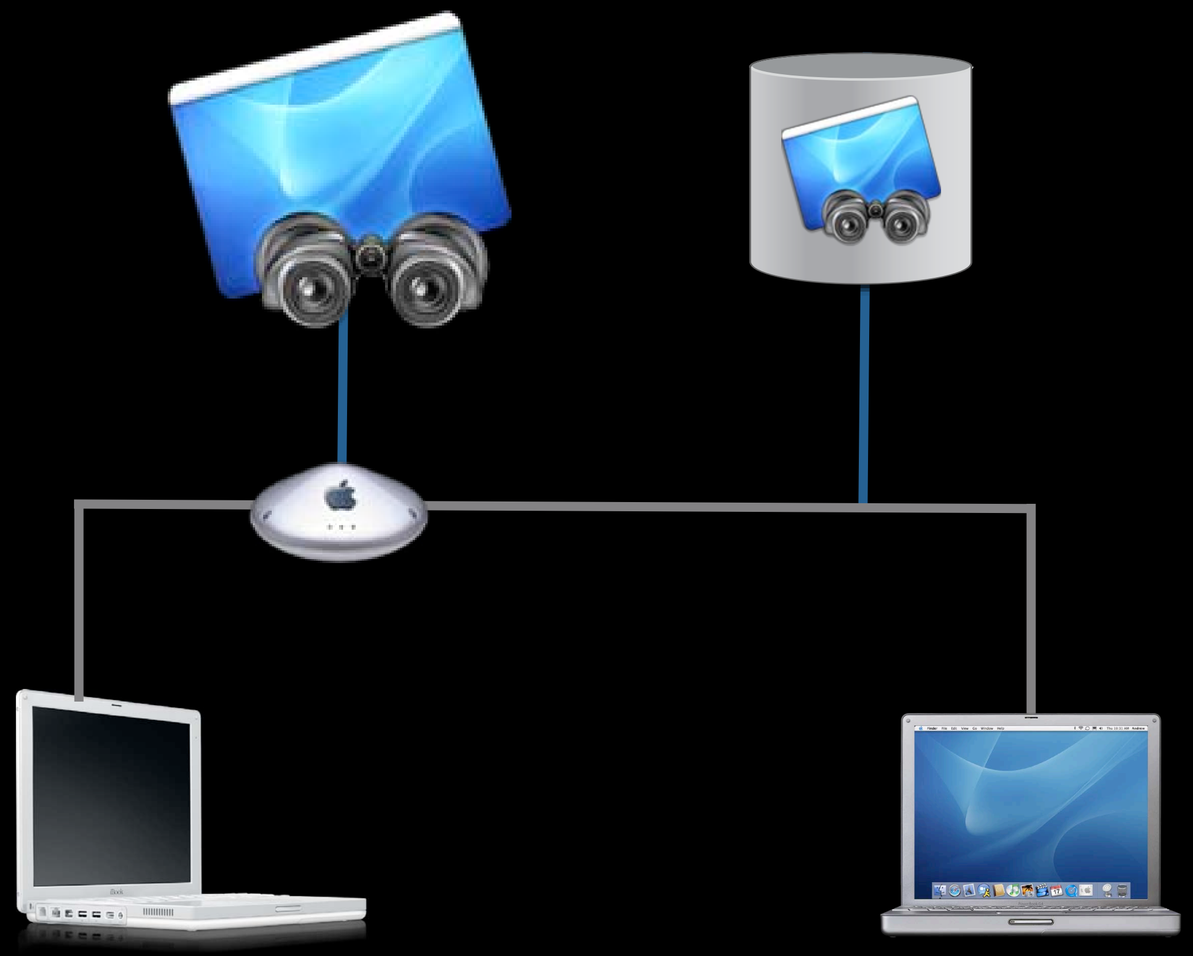
- In addition to system monitoring…
  - Software distribution
  - Asset management
  - Remote assistance
  - Remote administration

Apple Remote Desktop Has It All, but…

- “My portables aren’t always on the network”
- “I want X piece of information, but I don’t want XYZ report”
- “I’m missing task X”
- “I want to see changes in my lab over time”

Problem: Wandering Portables

Making informed decisions with machines that aren't there



Problem: Where Is Report X and Task Y?

Extending your toolkit with ARD's open infrastructure

PostgreSQL

UNIX BASED

Demo: More Tasks and More Reports

Extend your ARD toolkit with UNIX

http://developer.apple.com/wwdc2005/

Demo: System Trend Reporting

Scripting with ARD's extensible infrastructure

http://developer.apple.com/wwdc2005/

What We Learned

- Value of Apple Remote Desktop
  - Remote, secure access to your machines
    - “If we don’t do or have a specific task, Send UNIX probably does...”
  - Designing with portables in mind
  - Open data infrastructure allows development of third-party application

Scripted Monitoring

Todd Dailey
Sr. Sales Engineer

http://developer.apple.com/wwdc2005/

When to Write a Script?

- Scripts *automate repetitive tasks*
  - Examples:
    - Adding new students to a lab system
    - Nightly status reports
- Scripts *output data consistently*
  - Examples:
    - Importing disk-space reports into a database
    - Generating spreadsheets for management
- Scripts *run when you aren't there*
  - Examples:
    - Server downtime alerts
    - Disk-space monitoring

Scripting in OS X Server

- A great environment due to built-in tools
  - Bash, csh, tcsh, zsh, etc.
  - Python, PHP (yes, PHP runs at the command line), Perl, Ruby
  - AppleScript
- I think the best language is…
- Whatever you already know!
- If you're just starting out, Python is a great starter language

A Very Small Shell Script

- The problem:
  - Software RAID 1 (mirroring) is commonly used on Xserves
  - BUT, Server Monitor sends generic notifications, so you don't know a drive failure from an intrusion alert
- The solution:
  - A shell script that wraps around the "diskutil checkraid" command line

The Command Line Output

```
% diskutil checkraid

RAID SETS
---------

Name:              EntSalesBoot
Unique ID:         EntSalesBoot8db4f902632011d9b6d1000d939c34c0
Type:              Mirror
Status:            Running
Device Node:       disk2
-------------------------------------------------------------------
 #      Device Node                 Status
-------------------------------------------------------------------
0       disk0                       OK
1       disk1                       OK
-------------------------------------------------------------------
```

The Script

```
#! /bin/bash
# raidcheck.sh
#  check the status of the OS X built-in software raid, e-mail if any
#  raid has a degraded status
#

diskutil checkraid | egrep '^0|^1' | while read LINE; do
  ISOK=`echo $LINE | awk '{ print $3 }' | tr -cd '[:alpha:]'`

  if [ "$ISOK" = "OK" ]; then
   echo "`hostname` $LINE"
  else
   echo "`hostname` $LINE"
   echo "ALERT: `hostname` has a disk with status $LINE." \
         | mail -s "ALERT: `hostname` has a disk with status $LINE." \
                  > 4080000000@mmode.com
  fi

done
```

Demo

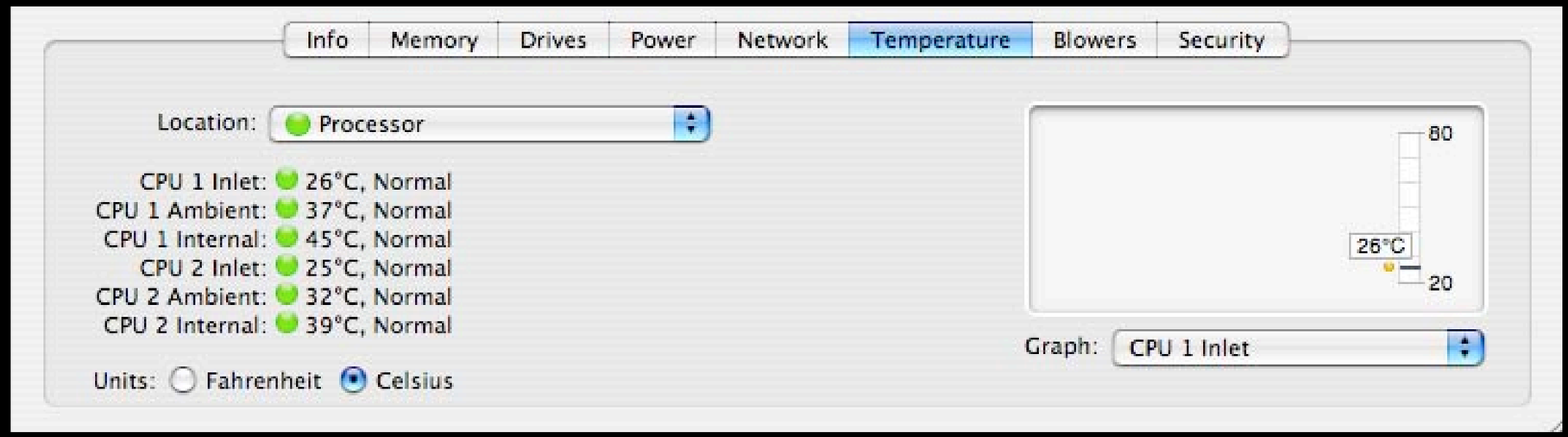
raidcheck.sh—A Bash Shell Script

Todd Dailey
Senior Sales Engineer

http://developer.apple.com/wwdc2005/

The Problem

- Server Monitor displays all 11 Xserve sensor temperatures graphically, but there is no way to log the data if we're trying to monitor Xserve temperatures over time



- The solution
  - A custom python script that can be run as a cron job

Getting Server Data with serveradmin

- serveradmin is a command line tool that gives you access to all the data you can see graphically in Server Monitor
- Run
  - `serveradmin command xserve:command = status`
- New in Tiger: `-x` for XML output

Demo

xserveg5logger—A Python Script

Todd Dailey
Senior Sales Engineer

http://developer.apple.com/wwdc2005/

What We Learned

- Scripts are a power addition to an OS X Server admin's tool belt
- Many tools are available
  - Airport command line tool
  - `serveradmin`
  - `system_profiler`
- You can write scripts yourself for your environment

Integrating Mac OS X into Existing Open Source Monitoring Systems

Todd Dailey
Sr. Sales Engineer

http://developer.apple.com/wwdc2005/

Monitoring Solutions

- Open source or commercial
- Clients on many platforms including Mac OS X
- Servers on many platforms including Mac OS X
- Nagios is what we're showing today, but…

Nagios Explained

- Widely deployed in education, IT enterprise, government, and elsewhere
- Open source
- Web-based infrastructure
- Plugins
  - Monitoring
  - Notification
- Hierarchical monitoring—down vs. unreachable
- Contact via email, pager, or user-defined method

Monitoring Mac OS X with Nagios

- Server on Mac OS X or other Nagios-supported platform
- Run monitoring plugins on the client
  - Via SSH
  - Via NRPE
  - Remotely via SNMP
- Any monitoring script can be easily adapted to work with Nagio

Demo

Monitoring Apple Software RAID

http://developer.apple.com/wwdc2005/

Documentation, Sample Code, and Other Resources

http://developer.apple.com/wwdc2005/

Related Sessions

Building Automator Actions for System Administrators	Session 645 Friday 5:00PM

Q&A

Nader Nafissi
Product Manager
Server and Storage Software Product Marketing

http://developer.apple.com/wwdc2005/

WWDC2005

Worldwide Developers Conference